Washington State Department of Transportation

Hood Canal Bridge East-half Replacement and West-half Retrofit Project

Truss Removal and Installation Facts

Why build new structures?
Like the Hood Canal Bridge's east-half pontoons and superstructure, its trusses are nearing the end of their useful life.

The new Hood Canal Bridge trusses use the same design standards as offshore oil derricks. The structures' members are tubular, which gives them the added strength and flexibility needed to handle the weather and tidal shifts of the Hood Canal for many years to come.

The new trusses are **30-feet wider** than old roadway and are designed to match the approach spans at the Hood Canal Bridge, which were expanded in 2005. The wider construction not only improves the overall safety of the bridge today, but it also allows WSDOT to double capacity from two to four lanes in the future without having to build new trusses.

What the trusses do?
The new trusses will connect the floating pontoons to the concrete approach roadways that have foundations in Kitsap and Jefferson counties. The trusses rotate 16.5 feet up and down like hinges, maintaining the connection between the stationary roadway and the floating bridge while allowing the bridge to shift up and down with the tides.

How large are the new trusses?
The trusses measure approximately **280-feet long, 70-feet wide and 40-feet tall** – making them almost 100 feet longer than a **Boeing 787 Dreamliner.** The steel trusses weigh approximately **1.6 million pounds** each – outweighing four 787 Dreamliners by 150,000 pounds.

What materials are used to construct them?
The trusses are primarily made of structural bridge steel members that range from 20- to 42-inches in diameter. The members, which include the top and bottom chords, diagonals and struts, are tubular to add strength and flexibility. The trusses' joint cans – where the members connect – are comprised of the same steel used by the American Petroleum Institute for offshore oil rig operations. The trusses are the only ones of their kind in Washington state. *(see graphic on back)*

Going big, bigger and biggest
The May truss replacement at the Hood Canal Bridge will require the three largest floating cranes in General Construction's fleet. End-to-end, the three derrick barges (D.B.) that will be used to set the trusses stretch a combined **650 feet.** If you laid the Space Needle on its side, the barges would be longer than it by **45 feet.**

* *The D.B. General, the largest derrick barge on the West Coast, has a 1.4-million pound capacity and will do most of the heavy lifting while the D.B. Los Angeles and D.B. Bremerton assist with placement.*

The cranes can lift **2.38 million pounds.** That's enough to hoist **10 Blue Whales,** the largest animal that ever lived on earth.

- D.B. General – 700-ton capacity
- D.B. Los Angeles – 300-ton-capacity
- D.B. Bremerton – 190-ton capacity

How they'll be replaced

1. Three derrick barges position themselves at HoodCanal Bridge site
2. Tugs move barge with truss to the bridge site
3. Three cranes position themselves on either side of the barge
4. Cranes connect hooks to hoistslings on truss
5. Cranes hoist truss
6. Barge below truss is removed
7. Derrick barges slowly move while holding the truss aloft until they are in the correct position
8. Cranes lower truss into permanent bearing supports
9. Cranes move truss as needed to ensure proper alignment
10. Crews secure truss using large locking pin
11. Cranes disconnect from truss
12. Crews install connecting spans between truss and approach span
13. Once pontoons UVWX are installed, crew connected the truss and the floating pontoons

What will happen to the old trusses?
The old trusses will be removed and disassembled by WSDOT's Hood Canal Bridge Project contractor, Kiewit-General. The sections, which cannot be reused due to their age, and size, will be salvaged by the contractor and recycled.

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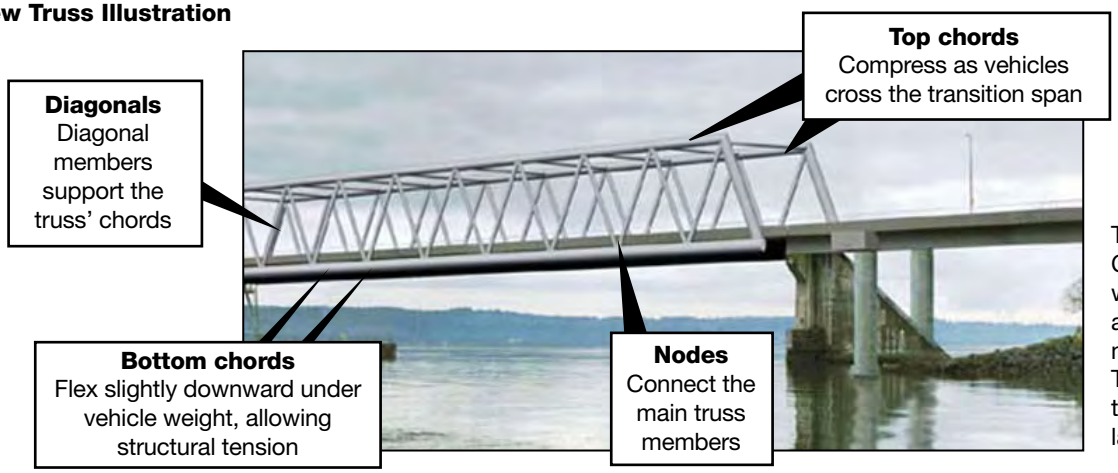
Washington State Department of Transportation

New Truss Illustration



The unique design of the Hood Canal Bridge's new east and west trusses adds strength and flexibility while reducing maintenance requirements. The trusses are large enough to accommodate additional lanes in the future.

Source: WSDOT Hood Canal Bridge Project Office